UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,207	08/01/2003	Robert J. Petcavich	13779-444	3285

45473 7590 07/07/2010

BRINKS, HOFER, GILSON & LIONE
P.O. BOX 1340
MORRISVILLE, NC 27560

EXAMINER	
CHAWLA, JYOTI	
ART UNIT	PAPER NUMBER
1781	
MAIL DATE	DELIVERY MODE
07/07/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/633,207	PETCAVICH, ROBERT J.	
	Examiner	Art Unit	
	JYOTI CHAWLA	1781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-18,20 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-18, 20-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION 10/633207

Applicant's amendment of 4/15/2010 has been entered. Claims 1-2, 4-6 and 19 have been cancelled, claims 12-14 have been amended and claims 20-21 have been added to the current application. Claims 12-18, 20-21 are pending and examined in the current application.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(A) Claims **12-15, 17-18 and 20-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 4729190), in view of Yang et al (US 6165529).

Lee teaches of coating composition including coating for seeds, i.e., for post harvest food (See Lee Column 10, line 57 to Column 11, line 12). Lee's coating composition comprises "copolymers of monocarboxylic acids and acrylic series with one or more polymerizable vinyl or vinylidene compounds, such as vinyl halides, vinyl acetate, vinyl benzoate...methyl methacrylate, ethyl acrylate...methacrylic acids and its esters, and the like" (Column 4, lines 20-43, Column 8, lines 9-15 and Column 9, lines 35-40), which includes polyvinylidene copolymers as recited in claims **12, 13** and polyvinylidene chloride polymer and vinyl acetate and vinyl chloride polymers co-monomers as recited in claim **14.** Lee also teaches of non-ionic surfactants such as octylphenoxy polyethoxy ethanols (Column 6, lines 15-45), ethoxylated sorbitan monolaurates, palmitates, stearates or oleates (i.e., polysorbate) and Triton-N (trademark) which is described as nonylphenoxy polyethoxy ethanol, i.e., nonylphenoxy ethoxylate (see Examples 10-13 and 35), as recited in claims **12, 13, and 18.**
Regarding the amounts of polyvinylidene copolymer and surfactant Lee teaches that "a blend of polymeric carboxylic acid and an ethoxylated non-ionic surfactant at a weight ratio ranging at least from 1:20 to 20:1" (Column 4, lines 5-9). Further, Lee teaches of

variable concentration of polymers and surfactants in the coating compositions, which include the recited proportions as instantly claimed by the applicants (See for example, example 35, which includes 25 parts 25% aqueous solution of polyacrylic acid and 5 parts of surfactant). Thus, coating compositions comprising polyvinylidene copolymer and surfactants octylphenol ethoxylates and nonylphenol ethoxylates were used as surfactants or emulsifiers in the art of food coating at the time of the invention.
Regarding new limitation of coating fruits and vegetables as per claims 12-14, Yang teaches that coating compositions for post harvest produce including fruits and vegetables, such as banana (Column 4, lines 52-54), tomatoes (Column 5, line 53), avocadoes (column 6, line 38), mangoes (Column 6, line 52), was well known in the art at the time of the invention, which includes fruits selected from applicant's recited list according to new **claims 20 and 21**. Furthermore it is noted that coating compositions comprising polymer and surfactant proportions in the recited range were known at the time of the invention, as taught by Yang (See Column 2, lines 40-45). Yang teaches that the coating composition comprising 1-20 % by weight polyvinyl compound and 0.03 to 5% by weight of a surfactant, which fall in applicants' recited range for claim **13**. The coating as taught by Yang limits but does not prevent respiratory exchange , thereby controlling and typically prolonging the maturation and ripening process of the post harvest produce, which results in increasing the permissible storage time between harvest and consumption (Yang, Column 2, lines 46-53). Therefore, one of ordinary skill at the time of the invention would have been motivated to modify Lee and include polyvinylidene copolymer and surfactant in the amounts as taught by Yang at least for the purpose of including optimal amount of polymer and surfactant, such that the coating is effective in limiting respiratory exchange of gases in the post harvest produce and increasing the permissible storage time between harvest and consumption (Yang, Column 2, lines 46-53).
Further, regarding the newly added limitation of "for the preservation of post harvest produce ...wherein the post harvest produce are fruits and vegetables" to lines 5-6 of claim 12 and 13 and new claims 20-21, it is noted that Lee teaches of a coating

composition which can be utilized to coat objects as well as food products. Lee specifically discloses of coating compositions that provide controlled release of active ingredients (Column 10, lines 7-64) and can be used as "protective coatings for a wide variety of substrates" and can also "provide controlled release of herbicides and insecticides" (Column 10, lines 64 to 67) and for various purposes including protecting the substrate or for releasing in a controlled manner of an active agent into the environment of use over a prolonged period of time (Lee Column 9, 10). Further as a specific example, Lee discloses of utilizing the coating for coating seeds (Column 11, lines 6-15), i.e., post harvest food or for coating post harvest products, such as seeds, by providing controlled release of active ingredients, such as fungicide during the period of storage for germination (Lee, Column 11, lines 6 to 15). Furthermore it is noted that coating compositions for post harvest produce comprising polymer and surfactant proportions in the recited range were known at the time of the invention, as taught by Yang (See Column 2, lines 40-45). The coating as taught by Yang limits but does not prevent respiratory exchange, thereby controlling and typically prolonging the maturation and ripening process of the post harvest produce, which results in increasing the permissible storage time between harvest and consumption (Yang, Column 2, lines 46-53). Thus, coating composition as disclosed by Lee was known to be utilized for purposes of protecting edible products and delivering active agents, such as fungicide to the post harvest foods, such as seeds. It was also known that fruits and vegetables after harvest have extended storage life when coated (Yang). Further coating compositions for post harvest produce comprising polymer and surfactant in the recited range of the applicant, and comprising antimicrobial or protective agents in a range overlapping applicant's claimed range were known at the time of the invention, as taught by Yang (See Column 2, lines 40-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lee in view of Yang and apply coating comprising polyvinylidene chloride copolymer and surfactant in the amounts as taught by Yang and apply the coating composition to other post harvest products including produce to protect the produce after harvest from damage by

protecting the surface of produce from environment and also by providing controlled release of protective chemicals, such as fungicide to the post harvest food. One of ordinary skill would have been motivated to modify Lee at least for the purpose of providing an effective coating that limits respiratory exchange of gases in the post harvest produce and increases the permissible storage time between harvest and consumption (Yang, Column 2, lines 46-53).

Regarding claim **15**, Lee teaches a coating composition with active ingredients, such as, germicides, medicaments fungicides, disinfectants, insecticides, pesticides, herbicides and other volatiles (i.e., antimicrobial) (Column 8, lines 48-54). Regarding the amount of active ingredient, Lee teaches of various examples including 0.5 parts of active ingredient (See Lee Example 29). Yang teaches a coating composition for post harvest produce and composition taught by Yang contains 0.05-5% antimicrobial agents, such as, triclosan or methylparaben (Column 3, lines 31-33), which encompasses the range taught by applicant in claim 15. Thus, antimicrobials, including methylparaben in the recited range of the applicant were known to be included in coating compositions for post harvest produce. It would have been obvious to one with ordinary skill in the art at the time of the invention to modify coating composition taught by Lee and include antimicrobial agent in the range as taught by Yang at least for the purpose of making the coating compositions that are effective in retarding the microbial growth and are specifically suited to a type of produce, length of storage (transportation/ ripening) and the storage conditions such as, humidity, temperature etc. Regarding the overlapping of ranges between the invention and prior art composition it is noted that in the case where the claimed ranges "overlap or lie inside the ranges disclosed by the prior art" a prima facie case of obviousness exists (In re Wetheim, 541 F2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990)).

Regarding claim **17**, Lee teaches of a surfactant based on ethoxylated polydimethylsiloxane, however, the reference is silent as to role of polydimethylsiloxane as antifoam in the coating composition. Yang teaches addition of an antifoaming agent, such as polydimethylsiloxane, to the coating composition in a range 0.001 to 0.005% (Column 3, lines 34-36), which falls within the recited range of the applicant. One of ordinary skill in the art at the time of the invention would have been motivated to modify Lee based on the teachings from Yang, and employ an antifoaming agent in the coating emulsion in order to avoid unwanted foam. One would have been motivated to use an inert chemical antifoams based on silicone, such as polydimethylsiloxane, at least for the reasons that silicone based chemical antifoams such as, polydimethylsiloxane, are quick acting due to lower surface tension, and they are non-reactive to other process media and can be added to most compositions, and also remain effective for longer time.

(H) Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee and Yang, further in view of IDS reference Bice et al (US 3674510), hereinafter Bice.

Lee in view of Yang is applied to claims **12-15, 17-18, and 20-21** above.

Regarding claim16, Lee teaches a coating composition with active ingredients including antifungal agents (Column 8, line 50). Lee also teaches that non-ionic surfactant when used as a carrier for the active ingredient; active ingredient loading can be up to 50% or more (See Column 3, 45-50). Further, coating compositions having specific amount of antifungal agents in the coating composition were known at the time of the invention. For example, Bice teaches a coating composition for produce containing an antifungal agent (Abstract and Column3, lines 48-55). Bice reference teaches that 0.4-2 parts per million, i.e., 400-2000 parts per billion of an antifungal compound 2-(4-thiazolyl) benzimidazole, hereinafter TBZ, based on the weight of fruit (Abstract, Column 3, lines 73-75 and Column 4, specially lines 40-45), which falls within the recited range of the

applicant for claims 5 and 16. Thus, antifungal agents in the recited range of the applicant were known to be added to the food coating compositions (Bice). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Lee and include fungicide in the amount taught by Bice. One of ordinary skill in the art at the time of the invention would have been motivated to modify Lee at least for the purpose of including an effective amount of antifungal agent in the coating composition for retarding fungal growth in the coated post harvest food for a desired storage time, and under desired storage conditions.

Response to Arguments

Applicant's arguments filed 4/15/2010 regarding newly amended claims 12-18 and new claims 20-21 have been fully considered but are moot in view of the new ground(s) of rejection.

i) Regarding the specific argument that "one of ordinary skill in the art would have no reason to combine the teachings of Lee and Yang because the references are solving different problems" (Remarks of 4/15/2010, page 6, paragraph 3, lines 2-3) is not persuasive In response to applicant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, Both Lee and Yang are applying protective coatings to the post harvest products to prevent microbial damage and extend storage life of the post harvest produce, which makes Lee and Yang fall in same field of endeavor and trying to solve the same problem of protecting post harvest produce from microbial damage and

extending storage life of the same, which is also the same problem the applicant's invention is trying to solve. Applicant is further referred to the rejection of claims 12-13.

ii) Regarding the argument that Lee does not teach an "aqueous emulsion" but instead teaches of an "aqueous solution" which is not an aqueous emulsion as claimed (Remarks of 4/15/2010, Page 5, rejections to page 7, paragraph 2). Applicant's argument has not been found persuasive because Lee teaches of the polymer and emulsifier or surfactant as per the claimed invention in an aqueous medium, as claimed. Specifically Lee's coating composition (Column 10, line 57 to Column 11, line 12) comprises "copolymers of monocarboxylic acids and acrylic series with one or more polymerizable vinyl or vinylidene compounds, such as vinyl halides, vinyl acetate, vinyl benzoate…methyl methacrylate, ethyl acrylate...methacrylic acids and its esters, and the like" (Column 4, lines 20-43, Column 8, lines 9-15 and Column 9, lines 35-40), which includes polyvinylidene copolymers as recited in claims **12, 13** and polyvinylidene chloride polymer and vinyl acetate and vinyl chloride polymers co-monomers as recited in claim **14.** Lee also teaches of non-ionic surfactants such as octylphenoxy polyethoxy ethanols (Column 6, lines 15-45), ethoxylated sorbitan monolaurates, palmitates, stearates or oleates (i.e., polysorbate) and Triton-N (trademark) which is described as nonylphenoxy polyethoxy ethanol, i.e., nonylphenoxy ethoxylate (see Examples 10-13 and 35), as recited in claims **12, 13, and 18.** The function of surfactant or emulsifier is to act as surface active agent and make immiscible materials stay in suspension i.e., emulsify. Thus, Lee as applied to claims 12-13 teaches a composition that includes emulsified components in aqueous solution, i.e., an aqueous emulsion as claimed and applicant's statement that Lee teaches an aqueous solution and not an aqueous emulsion, has not been found persuasive.

This explanation is also consistent with applicant's own disclosure where in paragraph 16 of publication applicant utilizes the phrase "The emulsion is preferably aqueous and comprised by weight percent (w/w) from about 0.25% to about 25%, preferably 1% to 10% and more preferably 2% to 7% of polyvinylidene chloride

copolymer suspended in water, and about 0.0001 to 10%, and more preferably from about 0.01% to 1% surfactant, such as Triton-X45." (Emphasis added, paragraph 16) and in paragraph 19 for example, applicant refers to the coating composition as "aqueous solution" by stating that "The aqueous solution may be applied to the produce in any suitable or customary manner, e.g., by dipping the produce in the tank or vat of the solution, by spraying the solution onto the produce, or by passing the produce through a downwardly falling curtain or waterfall of the solution." (Emphasis added, Paragraph 19 of Publication). Thus, applicant's argument that Lee teaches of aqueous solution and not an emulsion has not been found persuasive.

Applicant's amendments and arguments have been considered and claims 12-18 and 20-21 are rejected for reasons of record.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JYOTI CHAWLA whose telephone number is (571)272-8212. The examiner can normally be reached on 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JC/
Examiner
Art Unit 1781

/Keith D. Hendricks/
Supervisory Patent Examiner, Art Unit 1781